

IN THE CLAIMS:

Amendments to the Claims are reflected in the listing of claims which begins on page 4 of this paper.

IN THE CLAIMS

1. (Currently Amended) A method for communicating from a first virtual machine to an external device, ~~a virtual machine operating system base portion defining said first virtual machine and other virtual machines from a CPU and other real resources of a real computer;~~ said method comprising the steps of:

~~said~~ base portion of a virtual machine operating system forming said first virtual machine and other virtual machines by respective allocations from a CPU, storage and other real resources of a real computer, providing said first virtual machine and said other virtual machines with a share of said CPU; said base portion controlling being common to all of said virtual machines and providing a communication pathways for communications from said first virtual machine to said other virtual machines and to a tangible network adapter card coupled to an external network leading toward said external device;

said first virtual machine writing an IP datagram to an output buffer within storage allocated to said first virtual machine, said IP datagram comprising data and a destination IP address associated with said external device; and

said base portion copying said IP datagram from said output buffer into storage allocated to said base portion such that said IP datagram passes from said first virtual machine into said storage of said base portion without passing through any other virtual machine, said base portion identifying said destination IP address from said IP datagram and determining from a list of said IP addresses for said other virtual machines in said real computer that said destination IP address does not correspond to any of said other virtual machines ~~or otherwise reside in said real~~ computer and in response, said base portion forwarding said IP datagram, addressed to said destination IP address, to said ~~a tangible network adapter card, coupled to an external network;~~ and

said tangible network adapter card sending said IP datagram to ~~said the IP destination IP~~ address via said external network.

Claim 2. (Canceled)

3. (Currently Amended) A method as set forth in claim 1 wherein the steps of ~~forming~~defining said first virtual machine and other virtual machines from ~~said~~a CPU, storage and other real resources of a real computer, and providing ~~a~~communication pathways between said first virtual machine and said other virtual machines and to said tangible network adapter card coupled to said external network leading to said external device, are performed by a single instance of said base portion.

Claim 4. (Canceled)

Claims 5-7. (Canceled)

8. (Currently Amended) A method as set forth in claim 1 further comprising the steps of:

said first virtual machine writing a second IP datagram to a second output buffer within said storage allocated to said first virtual machine, said second IP datagram comprising second data and a second destination IP address of a second one of said virtual machines; and

said base portion copying said second IP datagram from said second output buffer into storage allocated to said base portion such that said second IP datagram passes from said first virtual machine into said base portion storage without passing through any other virtual machines, said base portion identifying said second destination IP address from said second IP datagram and determining from said list of destination IP addresses for said other virtual machines in said real computer that said second destination IP address is an IP address of said second virtual machine, and in response, said base portion copying said second IP datagram into an input buffer within storage allocated to said second virtual machine without said second IP datagram leaving said real computer.

Claims 9-15 (Canceled)

16. (Currently Amended) A method as set forth in claim 1 further comprising the steps of:

an application program executing in said first virtual machine and forming a request to the external device, said request including request data and said destination IP address associated with said external device; and wherein

said IP datagram written by said first virtual machine to said output buffer in storage allocated to said first virtual machine includes said request data and said destination IP address, is based on said request.

17. (Currently Amended) A method as set forth in claim 1 further comprising the steps of:

a second one of said virtual machines writing a second IP datagram to a second output buffer in storage allocated to said second virtual machine, said second IP datagram comprising second data and a second destination IP address associated with a second external device;

said base portion reading said second IP datagram from said second output buffer, copying said second IP datagram from said second output buffer into storage allocated to said base portion such that said second IP datagram passes from said second virtual machine into said storage of said base portion without passing through any other virtual machine, said base portion identifying said second destination IP address from said second IP datagram and determining from said list of IP addresses for said other virtual machines in said real computer ~~second destination IP address~~ that said second destination IP address does not correspond to any of ~~said~~ the other virtual machines ~~or otherwise reside~~ in said real computer and in response, said base portion forwarding said second IP datagram, addressed to said second destination IP address, to said tangible network adapter card; and

said tangible network adapter card sending said second IP datagram to said second ~~IP~~ destination IP address via said external network.

18. (Previously Presented) A method as set forth in claim 17 wherein there is a single instance of programming within said base portion which performs the reading, copying, identifying, determining and forwarding steps for both said first IP datagram and said second IP datagram.

19. (Currently Amended) A system for communicating from a first virtual machine to an external device, said system comprising:

a CPU, storage and other real resources of a real computer; and

base portion means for ~~forming~~defining said first virtual machine and other virtual machines by respective allocations from said CPU, storage and other real resources of ~~said~~a real computer; and wherein

said base portion means controls ~~is common to~~ all of said virtual machines and provides ~~a~~ communication pathways for communications from said first virtual machine to said other virtual machines and to a tangible network adapter card coupled to an external network leading toward said external device;

said first virtual machine includes~~including~~ means for writing an IP datagram to an output buffer within storage allocated to said first virtual machine, said IP datagram comprising data and a destination IP address associated with said external device; and

said base portion means includes means for copying said IP datagram from said output buffer into storage allocated to said base portion such that said IP datagram passes from said first virtual machine into said storage of said base portion storage without passing through any other virtual machine, identifying said destination IP address from said IP datagram and determining from a list of said destination IP address for said other virtual machines that said destination IP address does not correspond to any of said other virtual machines ~~or otherwise reside in said computer~~ and in response, forwarding said IP datagram, addressed to said destination IP address, to ~~said~~a tangible network adapter card; ~~coupled to an external network~~; and

said tangible network adapter card sending said IP datagram to ~~said~~the IP destination address via said external network.

20. (Currently Amended) A system as set forth in claim 19 wherein the means for ~~forming~~defining said first virtual machine and other virtual machines from ~~said~~said CPU, storage and other real, computer resources of ~~a real computer~~ and providing ~~a~~ communication pathways between said first virtual machine and said other virtual machines and to a tangible network adapter card coupled to an external network leading toward said external device, are performed by a single instance of programming within said base portion means.

Claim 21. (Canceled)

22. (Currently Amended) A system as set forth in claim 19 wherein:

said first virtual machine includes means for writing a second IP datagram to said output buffer within storage allocated to said first virtual machine, said second IP datagram comprising second data and a second destination IP address of ~~another~~ a second one of said virtual machines; and

said base portion means including means for copying said second IP datagram from said output buffer into said storage allocated to said base portion means such that said second IP datagram passes from said first virtual machine into said storage of said base portion means without passing through any other virtual machines, said base portion means ~~including~~ identifying said second destination IP address from said second IP datagram and determining from said list of said destination IP address for said other virtual machines that said second destination IP address corresponds to said second virtual machine ~~means for determining that said second destination IP address is an IP address of said second virtual machine;~~ and in response, copying said second IP datagram into an input buffer within storage allocated to said second virtual machine without said second IP datagram leaving said real computer.

23. (Currently Amended) A system as set forth in claim 19 further comprising:

a second one of said virtual machines including means for writing a second IP datagram to a second output buffer in storage allocated to said second virtual machine, said second IP datagram comprising second data and a second destination IP address associated with a second external device;

said base portion means including means for reading said second IP datagram from said second output buffer, copying said second IP datagram from said second output buffer into storage allocated to said base portion means such that said second IP datagram passes from said second virtual machine into said storage of said base portion means without passing through any other virtual machine, said base portion means including means for identifying said second destination IP address from said second IP datagram and determining from said list of IP addresses for said other virtual machines in said real computer ~~said second destination IP address~~ that said second destination IP address does not correspond to any of the other virtual machines, ~~or otherwise reside in said computer~~ and in response, forwarding said second IP datagram, addressed to said second destination IP address, to said tangible network adapter card; and

said tangible network adapter card sending said second IP datagram to said second ~~IP~~ destination IP address via said external network.

24. (Previously Presented) A system as set forth in claim 23 wherein there is a single instance of programming within said base portion means which performs the reading, copying, identifying, determining and forwarding for both said first IP datagram and said second IP datagram.

25. (Currently Amended) A computer program product for communicating from a first virtual machine to an external device, said computer program product comprising:

a computer readable media;

base portion program instructions to ~~form~~define said first virtual machine and other virtual machines by respective allocations from a said CPU, storage and other real resources of a real computer; and wherein

said base portion program instructions define a base portion which ~~controls is common to~~ all of said virtual machines and provides ~~a~~communication pathways for communications from said first virtual machine to said other virtual machines and to a tangible network adapter card coupled to an external network leading toward said external device;

in response to said first virtual machine ~~writes~~writing an IP datagram to an output buffer in storage allocated to said first virtual machine, said IP datagram comprising data and a destination IP address associated with said external device, ~~and~~ said base portion program instructions copy said IP datagram from said output buffer into storage allocated to said base portion such that said IP datagram passes from said first virtual machine into said storage of said base portion ~~storage~~ without passing through any other virtual machine, said base portion program instructions identify said destination IP address from said IP datagram and determine from a list of said destination IP addresses for said other virtual machines in said real computer that said destination IP address does not correspond to any of said other virtual machines, ~~or otherwise reside in said computer~~ and in response, forward said IP datagram, addressed to said destination IP address, to said tangible network adapter card; ~~coupled to an external network;~~ and wherein

said base portion program instructions are stored on said media.

26. (Currently Amended) A computer program product as set forth in claim 25 wherein the base portion program instructions which form~~define~~ said first virtual machine and other virtual machines from ~~said~~ CPU, storage and other real resources of ~~said~~ real computer and provide ~~a~~ communication pathways from~~between~~ said first virtual machine to~~and~~ said other virtual machines and to said tangible network adapter card coupled to said external network leading toward said external device consist of a single instance of program instructions.

Claim 27. (Canceled)

28. (Currently Amended) A computer program product as set forth in claim 25 wherein:

said first virtual machine writes a second IP datagram to said output buffer within storage allocated to said first virtual machine, said second IP datagram comprising second data and a second destination IP address of a second one of said virtual machines; and

said base portion program instructions copy said second IP datagram from said output buffer into said storage allocated to said base portion such that said second IP datagram passes from said first virtual machine into said storage of said base portion without passing through any other virtual machines, and identify said second destination IP address from said second IP datagram and determine from said list of destination IP addresses for said other virtual machines in said real computer that said second destination IP address is an IP address of said second virtual machine, and in response, copy said second IP datagram into an input buffer of storage allocated to said second virtual machine without said second IP datagram leaving said real computer.

29. (Currently Amended) A computer program product as set forth in claim 25 wherein:

a second one of said virtual machines writing a second IP datagram to a second output buffer within storage allocated to said second virtual machine, said second IP datagram comprising second data and a second destination IP address associated with a second external device; and

said base portion program instructions read said second IP datagram from said second output buffer, copy said second IP datagram from said second output buffer into storage allocated to said base portion such that said second IP datagram passes from said second virtual machine into said storage of said base portion without passing through any other virtual machine, said base portion program instructions identify said second destination IP address from said second IP datagram and determine from said list of second destination IP addresses for said other virtual machines that said second destination IP address does not correspond to any of the other virtual machines ~~or otherwise reside~~ in said real computer and in response, forward said second IP datagram, addressed to said second destination IP address, to said tangible network adapter card.

30. (Previously Presented) A computer program product as set forth in claim 29 wherein there is a single instance of programming within said base portion program instructions which performs the reading, copying, identifying, determining and forwarding for both said first IP datagram and said second IP datagram.

Please enter new claims 31-39 as follows:

31. (New) A method as set forth in claim 8 wherein:

there are respective virtual network interface cards in said base portion for said other virtual machines, said virtual network interface cards having respective IP addresses; and

said list of IP addresses for said other virtual machines in said real computer resides in said base portion and is a list of IP addresses for said virtual network interface cards; and

the step of copying said second IP datagram into an input buffer within storage allocated to said second virtual machine comprises the step of said virtual network interface card for said second virtual machine copying said second IP datagram into said input buffer within storage allocated to said second virtual machine.

32. (New) A method as set forth in claim 1 wherein there is no translation of said destination IP address in said IP datagram as written by said first virtual machine to said output buffer within said storage allocated to said first virtual machine before the step of forwarding said IP datagram to said tangible network adapter card.

33. (New) A method as set forth in claim 8 wherein there is no translation of said second destination IP address in said second IP datagram as written by said first virtual machine to said output buffer within said storage allocated to said first virtual machine before the step of copying said second IP datagram to said input buffer within storage allocated to said second virtual machine.

34. (New) A system as set forth in claim 19 wherein:

said base portion means includes respective virtual network interface cards for said other virtual machines, said virtual network interface cards have respective IP addresses; and

said list of IP addresses for said other virtual machines in said real computer resides in said base portion and is a list of IP addresses for said virtual network interface cards; and

said means for copying said second IP datagram into an input buffer within storage allocated to said second virtual machine comprises means within said virtual network interface card for said second virtual machine copying said second IP datagram into said input buffer within storage allocated to said second virtual machine.

35. (New) A system as set forth in claim 19 wherein there is no translation of said destination IP address in said IP datagram as written by said first virtual machine to said output buffer within said storage allocated to said first virtual machine before the forwarding of said IP datagram to said tangible network adapter card.

36. (New) A system as set forth in claim 22 wherein there is no translation of said second destination IP address in said second IP datagram as written by said first virtual machine to said output buffer within said storage allocated to said first virtual machine before the copying of said second IP datagram to said input buffer within storage allocated to said second virtual machine.

37. (New) A computer program product as set forth in claim 25 wherein:

said base portion program instructions form respective virtual network interface cards for said other virtual machines, said virtual network interface cards have respective IP addresses; and

said list of IP addresses for said other virtual machines in said real computer resides in said base portion and is a list of IP addresses for said virtual network interface cards; and

said base program instructions to copy said second IP datagram into an input buffer within storage allocated to said second virtual machine comprises program instructions for said virtual network interface card for said second virtual machine to copy said second IP datagram into said input buffer within storage allocated to said second virtual machine.

38. (New) A computer program product as set forth in claim 25 wherein there is no translation of said destination IP address in said IP datagram as written by said first virtual machine to said output buffer within said storage allocated to said first virtual machine before the forwarding of said IP datagram to said tangible network adapter card.

39. (New) A computer program product as set forth in claim 28 wherein there is no translation of said second destination IP address in said second IP datagram as written by said first virtual machine to said output buffer within said storage allocated to said first virtual machine before the copying of said second IP datagram to said input buffer within storage allocated to said second virtual machine.